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10/781,878

02/20/2004

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EXAMINER

NGUYEN, DUSTIN

ART UNIT

PAPER NUMBER

2454

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |   |  |
|------------------------------|--------------------------------------|---|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/781,878 | <b>Applicant(s)</b><br>SHINOMIYA, KIYOSHI |  |
|                              | <b>Examiner</b><br>DUSTIN NGUYEN     | <b>Art Unit</b><br>2454                   |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

1. This Office Action is responsive to the Argument filed 11/10/2009.

***Response to Arguments***

2. Applicant's arguments filed 11/20/1009 have been fully considered but they are not persuasive.
3. As per remarks, Applicants argued that (1) Sai does not teach or suggest that a transfer length is included in a communication command as recited in claims 1 and 5.
4. As to point (1), the previous Office Action rejected the claimed limitation of wherein the communication command includes a transfer length based on Shinomiya reference, not Sai reference. Furthermore, Shinomyia discloses a transfer length representative of a length of data to be transferred [ i.e. a predetermined transfer length specify the transfer count [LEN] ] [ Figure 3; and paragraphs 0051, 0052, 0124 ]. Therefore, the claims remain rejected over Shinomyia reference.
5. As per remarks, Applicants argued that (2) none of the references teaches or suggest a processor that does not carry out any address conversion, and instead issues out communication commands and logical addresses to a communication device as recited in claims 15 and 19.

6. As to point (2), Examiner respectfully disagrees since Shinomiya shows the transfer device 400, which is separated from CPU 100 and the system controller 200, and receives transfer command from the CPU 100 via the system controller 200, for translating virtual address to real address [ i.e. obviously the CPU or system controller does not carry out any address conversion, this function is being performed by the transfer device 400 ] [ Figures 2 and 3; and paragraphs 0048, 0049 and 0053 ].

7. As per remarks, Applicants argued that (3) Ang reference has nothing at all to do with limiting the number of communication commands to be processed simultaneously to a same destination computer from a sending computer, in order to increase a hit ratio of a translation lookaside buffer as recited in claims 3, 7, 14 and 17.

8. As to point (3), Applicants erred in summarizing paragraph 0064 of Ang reference. There is nothing in Ang reference described a pipeline system that contains conflict detection hardware to ensure a minimum gap between an instruction and any conflicting instruction. Instead, Ang reference describes a system uses a translation look-aside buffer implemented in a microprocessor and the contents of the TLB can be updated while processes are executing, allowing for virtual/physical addresses to be constantly updated and loaded into the buffer without requiring the buffer be too large [ Abstract ]. Specifically, paragraph 0064 of Ang teaches the counters are checked to see if they are at their maximum allowable value, if so, the physical addresses are not passed to the peripheral device or to the physical address register [ i.e.

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limiting the number of communication commands to be processed ]. As such, the claims remain rejected over the cited prior art.

9. As per remarks, Applicants argued that (4) Hayes does not teach or suggest that a command is sent to includes a maximum simultaneously process number, whereby when that number is two or more, a command identification number indicative of an identification number of a command to be processed simultaneously is added to each of communication packets to designate a TLB entry to be used as a reception source as recited in claims 12 and 13.

10. As to point (4), it is rejected for reasons as stated in the previous Office Action. Furthermore, Hayes teaches broadcasting a demap request packet to remove page table entries from a plurality of TLBs in the multiprocessor computer system, wherein process\_id to be used for the demap transaction is broadcast in bits 47 through 32 [ i.e. a command identification number indicative of an identification number of a command to be processed simultaneously is added to each of communication packets to designate a TLB entry to be used as a reception source as claimed ] [ Figure 2; Abstract; col 2, lines 23-44; and col 3, lines 29-45 ].

***Claim Rejections - 35 USC § 103***

11. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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12. Claims 1, 2, 5, 9-11, 15, 16, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya (US 2003/0033431) in view of Sai (JP 2000115197A, using translated abstract published April 21, 2000).

Regarding **claims 1, 5, 11, 15, and 19**, Shinomiya discloses:

each of a transmission section and a reception section of said communication device including a translation look aside buffer for retaining a plurality of translation look aside buffer entries; (see Fig. 2, transfer device 400 contains transmitting and receiving devices 410 and 420 which each contain TLBs 430 and 440)

determining, when a communication command including information of that one of the computers which is a sending source is issued from said processor, one of the translation look aside buffer entries which is to be used in accordance with the computer of the sending source by means of said reception section, ([0022]-[0024] discloses determining what entries to use)

wherein the communication command further includes a destination computer number, a destination logical address, a transfer length representative of a length of data to be transferred, a sending source computer number, , and a sending source logical address, and (Fig. 8a-8e disclose including source and destination computer numbers and logical (virtual) addresses as well as instruction data within a command. See also [0051, 0052, 0124, and 0137])

wherein the communication command is transmitted divisionally in a plurality of communication packets over the switched network, in order to assure reliability of

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communication.(See switched network 600 in Fig. 2, on which packets such as Fig. 8a-e are sent)

Shinomiya does not explicitly disclose including source and destination process numbers within a command packet.

The general concept of including source and destination process numbers within a command packet is well known in the art as taught by Sai. (See solution section “source process name, source process address, destination process address and an identification”)

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Shinomiya with the general concept of including source and destination process numbers within a command packet as taught by Sai in order to allow finer granularity over traffic control.

Regarding **claims 2, 16, and 20**, Shinomiya discloses:

wherein said transmission section of said communication device produces a communication packet including the information of the computer of the sending source and transmits the communication packet to another one of said computers. (see information section in packets Fig. 8a-8e)

Regarding **claim 9**, Shinomiya discloses:

wherein said transmission section of said communication device extracts a communication command from said main storage device in accordance with an instruction from said processor, converts a logical address of data of the sending source in the communication command into a physical address, extracts transmission data from said main storage device, produces a communication packet from the extracted data and

the communication command and transmits the communication packet to the destination computer. (See Fig. 7, Sequenses 1-7, see also [0079]-[0090])

Regarding **claim 10**, Shinomiya discloses:

wherein said reception section of said communication device receives a communication packet from said switched network, converts a destination logical address into a destination physical address for said main storage device and writes data in the communication packet into the destination physical address. (See fig. 7, sequence steps 8-10 disclose translating an address and writing the data to the address)

13. Claims 3, 7, 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya and Sai as applied to claims 1, 5, and 15 above, and further in view of Ang (US 2004/0221127 A1).

Shinomiya and Sai teach all the limitations of claims 3, 4, 7, and 17 except for wherein the number of communication commands to be processed simultaneously to the same destination computer from the computer of the sending source is limited by said communication device.

The general concept of limiting the simultaneous process commands based off of the computer source is well known in the art as taught by Ang. (Pg.9 [0064] The number of pages which may be pinned down by any single user-level job or process, as well as the total number of pages which may be pinned down, is preferably capped at operator programmable levels.)



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It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Shinomiya and Sai with the general concept of limiting the simultaneous process commands based off of the computer source as taught by Ang in order to preserve system resources.

14. Claims 4, 8, 12, 13, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya and Sai as applied to claims 1-2, 5-6, 15-16, and 19 above, and further in view of Hayes (US 5,497,480).

Regarding claims **4, 8, and 18**:

Shinomiya and Sai teach all the limitations of claims 4, 8, and 18 except for wherein an identification number of a processing command in the computer of the sending source is applied to a communication packet by said communication device, and for different communication packets which have the same identification number of the processing command, the same translation look aside buffer entry is used by said reception section of said communication device.

The general concept of an identification number of a processing command in the computer of the sending source is applied to a communication packet by said communication device, and for different communication packets which have the same identification number of the processing command, the same translation look aside buffer entry is used by said reception section of said communication device is well known in the art as taught by Hayes. (see Col.2 lines 23-34)

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Shinomiya and Sai with the general concept of an identification number of a processing command in the computer of the sending source is applied to a communication packet by said communication device, and for different communication packets which have the same identification number of the processing command, the same translation look aside buffer entry is used by said reception section of said communication device as taught by Hayes in order to reduce system load.

Regarding claims 12-13,

Shinomiya and Sai teach all the limitations of claim 10 except for wherein the communication command further includes a communication command maximum simultaneous process number that indicates a number of processes simultaneously to a same destination, for transmission over the switched network, wherein when the communication command maximum simultaneous process number is two or more, the transmission section adds a command identification number indicative of an identification number of a command to be processed simultaneously to each of the communication packets to designate a translation lookaside buffer entry to be used by the reception section.

The general concept of limiting the number of concurrent requests from the same source is well known in the art as taught by Hayes. (see Col.2 line 27).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Shinomiya and Sai with The general concept of limiting the number of concurrent requests from the same source as taught by Hayes in order to make the system more efficient.

**15. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dustin Nguyen whose telephone number is 571-272-3971. The examiner can normally be reached on Monday through Friday 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DUSTIN NGUYEN/  
Primary Examiner, Art Unit 2454